



Case report

Collision victim travels for “seven kilometres” on top of the car that hit him[☆]

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ABSTRACT

Case report: A 26-year-old man, after a drinking binge, drove into a tram building site and collided with a track-grinding machine which left a fist-size hole in his windscreen. He then hit a construction worker who was catapulted onto the car roof. The worker held on to the antenna and the windscreen hole, while the car drove on for 7 km, reaching speeds of 90 km h^{−1}.

The victim suffered several fractures and survived with relatively little consequential damage. The investigation showed the driver to have been under the influence of alcohol and cannabis. In trial, he claimed loss of memory and stated that he had noticed neither the accident nor the man on his car roof.

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1. Introduction

In a collision between a pedestrian and a car with a higher speed of collision (50–70 km h^{−1}) more serious or even fatal organ injuries may be expected. After having been scooped up, a pedestrian usually falls off onto or the next to the lane of traffic. Exceptions are rare with such collisions.

2. Case report

A 26-year-old man was invited to a pub to celebrate a friend's discharge from jail. He chose to drive his girlfriend's car. Both drinking mates drank large quantities of alcohol ('beer, peppermint liqueur and herbal schnapps') and took recreational drugs, namely 'speed' and 'joints'.

Eventually, his girlfriend called him and complained about her missing car. In a drunken slur, he promised to return immediately.

After having driven a distance of 8 km without any accident, he passed a properly secured tram building site. He crashed through the safety barriers and collided with a track-grinding machine (Fig. 1). The car was seriously damaged: The front window was smashed, leaving a fist-sized hole (Fig. 2). Three construction

builders were working at the site at this time. The car hit one of them, catapulting him onto the top of the car.

During the collision between the car and the grinding machine, the left rear tyre was punctured causing it to burst. The car then drove about 7 km through the city of Halle/S. wearing the tyre out to the rim. Several witnesses reported that the speed had been about 90 km h^{−1}, exceeding the speed limit of 50 km h^{−1}. Another witness reported that the car had stopped properly at a red traffic light and had only continued its journey when the light switched to green. Arriving at his girlfriend's house, the driver had no problem to reverse into a parking space. It was only then that he noticed the man on top of the car who had been holding on to the car antenna and the broken front window (Fig. 3, picture taken by instant camera). Shortly thereafter, the paramedics and the emergency doctor rescued the accident victim from the top of the car and took him to hospital.

3. Injuries of the victim

Initial state of shock reported by emergency doctor.
Computed tomography (CT) and X-ray analyses:

- Heavily dislocated multi-fragmented subcapital fracture of the right humerus
- medial comminuted fracture of the right clavicle and fracture of the right scapula
- instable fracture and dislocation of the right ankle joint

[☆] This article discusses the forensic and legal assessments given in this case.

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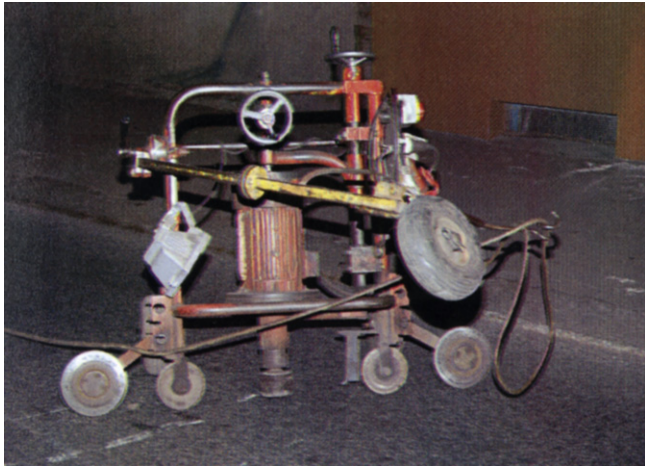


Fig. 1. Track-grinding machine.

- left distal tibia and fibula fracture
- bilateral pulmonary contusion
- no intracranial injuries
- cuts on the right hand

The fractures on the humerus and on both legs required surgery.

Statement on the medical certificate issued to the institution for statutory accident insurance: no danger to life.

Statement on the medical report issued to the police: life-threatening injuries.

4. Forensic examination of the driver

Observational findings: ataxia, slurred speech, tremor of the hands, incoherent thought process, bilateral pupil constriction (diameter 2 mm). No disorientation or disturbance of consciousness.

A blood sample was taken 90 min after the accident, showing:

Blood alcohol concentration: 0.198%
 Methanol (congener analysis): 4,18 mg l⁻¹
 Propanol-1 (congener analysis): 0,82 mg l⁻¹
 Tetrahydrocannabinol: 3,6 µg l⁻¹
 11-hydroxy-“THC”: 3,3 µg l⁻¹
 Tetrahydrocannabinol (THC)-carboxylic acid: 36,5 µg l⁻¹



Fig. 2. Front window with a fist-sized hole.



Fig. 3. The man on top of the car (original picture!).

5. Legal assessment

Once investigations were completed, the driver was charged with negligent bodily injury, drunk driving, driving without a licence and a hit-and-run offence. At the regional court, the defendant claimed to remember neither the accident (blackout) nor the man on the roof of his car. The defence lawyer argued that the driver could not be held criminally liable due to his tremendous intoxication by alcohol and drugs. Moreover, he doubted the life-threatening nature of the victim's injuries as the different medical statements were contradictory.

The victim was able to testify after several weeks in the hospital. He reported restricted movement when walking or lifting his arm but was said to be able to work 6 h a day.

The technical expert suggested that at the time of the accident, the defendant must have had a speed of 50 km h⁻¹ minimum and 70 km h⁻¹ maximum and had made no braking attempts when he collided with the grinding machine.

Both the psychiatric and forensic experts stated in their report that even under the influence of the substances involved, the driver's perceptual capacities would have remained largely intact and that the memory loss claimed by the driver is, in the claimed extent, hardly comprehensible.

Although they were unable to rule out that the driver's ability to control his actions was considerably diminished, evidence gave no indication that criminal liability had been fully removed.

The court too was convinced that the defendant must have noticed both the accident and the victim on his roof. Despite his considerable criminal record, the driver got away with a probationary 2-year prison sentence for reckless driving and negligent bodily injury since the judges thought the evidence for an intention to kill insufficient. In the defendant's favour the judges decided that, in his anxiety to get home, he repressed the fact that the construction worker was on his roof.

6. Discussion

The technical expert stated that the collision speed with the grinding machine was between 50 and 70 km h⁻¹. It should be taken into account that the speed the victim was hit with had already been slightly reduced by the collision with the grinding machine. The course of the accident, the injuries of the victim and the damage to the car indicate that speed had still been at least 40 km h⁻¹ at the point of collision with the pedestrian.^{1–3} The technical and medical

experts estimated the collision to have occurred in two stages, the first causing the fractures to the victim's left lower legs and the second causing those to the right side of his body.

In a collision between a pedestrian and a car with that speed of collision, more serious or even fatal organ injuries may be expected.^{4–7} However, depending on the concrete circumstances of an accident, it is still possible that the effects of the accident can be less dramatic. This has to be taken into account by the medical experts when reconstructing and assessing real road accidents. In the present case, the victim survived due to several lucky circumstances and suffered relatively small consequential damage.

Depending on the speed of the collision, the pedestrian's head would most of the time hit the bonnet, the lower frame, the windscreen or the upper frame.^{4,5,8} By being lifted onto the vehicle, the victim got several upper body fractures and pulmonary contusions but no head injuries. This suggests that the victim's head was not seriously involved in the lifting phase. After having been scooped up, a pedestrian usually falls off onto or next to the lane of traffic, which causes severe craniocerebral traumata or injuries of the cervical spine and thoracic viscera.⁵ Exceptions are rare with such collisions. However, in the present case, the hole left by the grinding machine in the car's windscreen enabled the victim to hold on.

Apart from the radio antenna or any existing railing, a car has no other parts that a person could grasp to withstand a speed of 90 km h⁻¹. There are no reports of similar comparable cases. Our case shows that a car–pedestrian collision does not inevitably lead to the usual results if the victim manages to hold on to already existing structures (e.g., antennas, etc.) or to structures brought about by the accident (deformations or defects and the like).

Despite the relatively small consequential damages, it is thought that the victim was, at least directly after the accident, in a life-threatening condition. This can be assumed by the victim's initial state of shock, several fractures with a risk of a pulmonary fat embolism and the bilateral pulmonary contusions.

The reported amount of alcohol consumed by the driver was likely to explain the blood alcohol concentration measured initially and the congener analysis. Considering the detected concentrations of alcohol, THC and its metabolites it must be assumed that the driver was habituated to those substances since only this is able to explain why he managed to drive for 7 km with a broken windscreen and a punctured tyre, reaching his destination. The blood alcohol concentration of nearly 0.2% far exceeded the German limit of 0.11% where a driver is considered absolutely unfit for driving. The THC concentration of 3.6 ng ml⁻¹ was significantly higher than the value of 2 ng ml⁻¹ stated by Drummer,⁹ which poses an accident risk comparable to the risk at a blood alcohol concentration of 0.1%. The cannabis-influence factor (comprised by the concentrations of THC, 11-hydroxy-THC and THC-carboxylic acid) of 18 was twice as high as the proposed limit suggested by Drasch.¹⁰ Both the symptoms observed by the doctor who took the blood sample and the circumstances of the accident which involved hardly comprehensible driving errors could easily be classified as a case of acute intoxication by a mix of cannabis and alcohol.^{11,12}

Immediately after the accident, the defendant was observed by several witnesses. They noticed that he was confused and apathetic. His motor abilities also seemed impaired (slurred speech and swaying gait). In connection to the medical observations made when the blood sample was taken, and the established mixed intoxication, it was not possible to rule out that the driver's ability to control his actions had not been considerably diminished under a moderate state of intoxication (classification by Feuerlein). Taking this into consideration, the lawyers suggested reduced criminal liability (§ 21 German penal code), which is a clause in German criminal law.^{13,14} The driver's ability to drive for several kilometres and reach his destination without any deviation implies, in contrast

and from a psychopathological point of view, that his orientation skills had remained largely intact. The driver's behaviour at a traffic light, as observed by a witness, demonstrated reactivity, adequate perception, attention and adaptability. Furthermore, the completion of the journey which ended with a reverse parking manoeuvre showed that his motor abilities and coordination were still functioning. It could therefore be assumed that his ability to control his actions had not been entirely eliminated, and his perceptive abilities were largely intact. This was also supported by the testimony given by the doctor which contradicted the memory loss claimed by the driver. Immediately after the incident, the driver had told the doctor who had taken the blood sample that he had just caused an accident.

In relation to the medical assessment of similar cases, it should be noted that, even in the case of significant intoxication by a mix of alcohol and cannabis, mental and motor skills may remain extensively intact if the person is used to these substances. Our case also shows that a certain concentration of alcohol and/or drugs should not provide the sole basis for expert assessment. Forensic psychopathological assessments (e.g., on a person's ability to control their actions or their perceptive abilities) requires an examination of all of a case's individual circumstances which include, besides the results of the chemico-toxicological analysis, also the concrete psychopathological state including any absence or presence of defunctionalisation symptoms as well as other influential factors (such as substance tolerance, fitness at the time or diseases).

Conflict of interest

Authors have no conflict of interest.

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Ethical approval

None declared.

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